

Chapter 2

Aesthetics of the Error: Media Art, the Machine, the Unforeseen, and the Errant

Tim Barker

University of New South Wales

The machine must become a work of art! We will discover the art of the machine.

Bruno Munari,

Manifesto del Macchinismo, 1952

Bruno Munari's comments published in 1952 come from a manifesto aimed at reconciling art with the machine.¹ Founded upon Futurist ideals and promoting the art and design movement known as "Movimento d'Arte Concreta" (MAC), in this manifesto Munari aimed to compel artists to abandon their "romantic" oil paints and embrace the "anatomy" of the machine. The creative expression of this attitude can be seen in his series of *Useless Machines*, produced prior to the publication of the manifesto, between the 1930s and 40s. The *Useless Machines* were abstract forms made of lightweight materials strung together by thin threads and designed to be suspended in mid-air. These "machines," which could be termed kinetic sculptures similar to the hanging mobiles of Alexander Calder, were designed to interact with their surrounding environment.² They have no internal power source to drive them. Rather, they rely on external forces, such as the wind, to set them in a gentle undulating motion. As such, we could say that the movements of the *Useless Machines* are not pre-scripted or programmed by Munari; the artist does not define the machine's routine. Instead, Munari designs them with only one purpose in mind: to allow them to find their own creative force. Of course he builds them, designing their weight and shape and thus directing the way they will behave in the wind, setting limitations on what they can achieve, setting the degrees of freedom in which they must operate, but the machine itself works with its external forces, which are unpredictable, to actuate a particular function. The art of the machine here is an art in which the machine, after being built by human hands, is itself creative.

We can bring this concept of creativity to bear on recent digital art and the aesthetics of the error by thinking of the art of the machine as an art outside the machine's pre-programmed routine. It is an art outside of the errorless algorithm, for this would merely amount to an art of the computer programmer. Rather the art of the machine is the art of open systems, relationships, and importantly the capacity to actualize process, which may lead to unexpected and errant outputs.

In order to understand the aesthetics of the error in digital art I would like to separate this argument into two sections. The first, titled "The Art of the Machine/The Art of the Error" examines artworks in which the artist's role is to set up situations in which errors manifest, and to exploit these errors in the art making process. In this section I also tie this practice to art history, namely to the aesthetic experiments that were undertaken in the early to mid-twentieth century, specifically those that relied on outside and largely unpredictable forces. In the second section, titled "Errors/Potentials/Virtuality," I put forward an understanding of the error as an outcome of particular conditions and potentials embedded in digital technologies. Throughout this argument I am interested in what Gilles Deleuze describes as the actualization of the virtual, a process by which novel unforeseen and unformed events are made actual. The term "virtual" as Deleuze uses it, and as will be explained later in the argument, signifies a conditioning that directs the way that the present moment actualizes, which, in our case, involves the becoming of an error.³ As such, both sections focus on process: the first focuses on the creativity of an error that arises from a set of conditions established by an artist; the second then focuses on the process by which an error comes into being, attempting to understand both philosophically and aesthetically how errors, and in fact any unforeseen information, manifests in our interactions with technology.

The Art of the Machine/The Art of the Error

The condition that marks the post-digital age may be precisely the condition for error. In the condition where machinic systems seek the unforeseen and the emergent, there is also a possibility for the unforeseen error to slip into existence. This condition can be seen in the tradition of artists using the error, just as Munari used the wind, as a creative tool. The difference though is that whereas the *Useless Machines* rely on outside forces, the error is something internal to the machine, it is something that is immanent to the machine's process. In his paper

“The Aesthetics of Failure: ‘Post-Digital’ Tendencies in Contemporary Music,” Kim Cascone points to the way in which composers, using digital means, exploit the inadequacies of a particular compositional or performative technology.⁴ Cascone cites composers such as Ryoji Ikeda who create minimalist electronic compositions using media as both their form and theme. In these compositions, the errors, imperfections, and limitations of the particular compositional media are the central constituting elements of the piece. In addition to music, this glitch aesthetic is also exploited in the visual arts. Artists such as Tony Scott set up situations in which errors are able to emerge and be exploited in the art making process. Scott’s work in his *Glitch* series consists of brightly colored geometric forms, assembled in rhythmic compositions, that on the surface appear to be in the mold of Frank Stella’s linear works or Bridget Riley’s Op Art. However, these digital prints are assembled from the visual outputs of computer crashes and software errors caused by Scott. In these types of work the artist’s role is to prompt a glitch or an error to arise in a specific system, then to reconfigure and exploit the generative qualities of the unforeseen error.

The approach to art making as an emergent process, realized as an interaction between the artist and the limitations of the machine, is also seen in the live VJ performances of Jorge Castro. In the first few minutes of Castro’s video performance *Messy* (2005), flashes of a moving image, which slowly moves through a landscape, erratically comes to view through various effects of visual noise. This error, intentionally sought out by the artist and given form by digital means, appears to be the product of an analogue tape head sporadically losing contact with the videotape. Here, flashes of an intelligible image—a picturesque Argentinian landscape—are seen through the unintelligible patterns caused by the loss of video signal. Similarly, in his work *Witness* (2006) (Figure 2.1) Castro uses error as an aesthetic device. In this work the digital error is similarly used to *re-present* the original source material. In this video work a large man sits in front of a building, head down, asking for money. Only one woman, from the steady stream of passers by, stops to acknowledge the man on the corner, dropping money into his jar. The video work continuously loops back in staccato jump-cuts to the interaction between this woman and the heavy set man, seeming to skip, as though a glitch in the code, then returning to the stream of passers by. Apart from the man and the woman, all figures are distorted by either a vertical extension of the upper parts of their bodies, continuing upward out of frame, or a horizontal extension of their lower bodies



FIGURE 2.1 Jorge Castro, *Witness* (still), 2006. Reproduced with permission of the artist

out of frame. This gives the impression that there has been an augmentation to the digital signal, a mistranslation from the code of the computer to the image on the screen. A distinctly digital aesthetic is created here as the generative qualities and idiosyncrasies of an error make obvious the processes of the computer.

The aesthetics of the error or the aesthetics of the glitch, however, are not necessarily something new and are not necessarily confined to the realm of the digital. For instance, at the beginning of the 1960s Franz Erhard Walther, experimenting with art “informel,” utilized errors and chance occurrences as generative tools. The story goes that Walther was using a bucket full of water to weigh down a collage when the bucket unexpectedly sprang a leak and drenched the paper, seemingly ruining the collage. However, as the paper dried, it took on new forms, unforeseen by the artist.⁵ From here Walther’s role as an artist changed: he now saw his role to set up situations in which transformational processes could occur. The emphasis of the creative act is now on process, and in particular opening up this process to outside forces. This includes his famous *Werkstücke* (Work Pieces), works made of fabric that the viewer is invited to wear or to actively manipulate in order to “activate” the artwork. Prior to this, artists such as Jean Arp, as he dropped cut-outs onto

a canvas, allowed the creative process to be directed by the outside forces of gravity and wind. Similarly, the Japanese artist Fujiko Nakaya, in her fog sculptures from the 1970s onward, allowed the wind and the landscape to guide the shape and intensity of a mist, generated by water forced through small nozzles. Also, the group that have become known as “process artists,” artists such as Bruce Nauman, allowed the act of making to take precedence over the finished form. The artist’s job was to initiate process, not to control the outcome. All of these aesthetic experiments are involved in a process of actuating an event from a field of potential; the works take on a particular form because of activities and interactions that occur between their generative elements.

In a sense the artist sets up particular degrees of freedom as a set of internal limitations in which the system must function, directing, but not producing, the end product. The idea of *degrees of freedom* comes from Manuel DeLanda’s work on the philosophy of science. This concept, which DeLanda takes from the discipline of mathematics, refers to the ways in which an object may change.⁶ For instance, he gives the example of a pendulum, which, as it can only ever change its velocity and its position, has two degrees of freedom. He also points out that a bicycle, because it has – for the sake of the argument – five moving parts, (handle bars, front wheel, crank-chain-rear-wheel assembly, and two pedals) has ten degrees of freedom, as each part may change its position and its velocity.⁷ The degrees of freedom are thus the limits in which a system unfolds; they are the boundaries that direct the process of the system. Transplanting this thinking to the aesthetics of the machine and the aesthetics of the error, we see that aesthetic processes are an output of a particular condition that is set up by the artist. Artists working with digital media such as Scott and Castro and artists using more traditional media such as Munari and Walther set these degrees of freedom upon the creative systems. They restrict or design the conditions of the machine. In Munari’s case this involves designing the wind resistance of his mobiles, and for Walther, the mechanics of his works involves bringing certain materials together, such as paper and water or a sculpture made out of a piece of fabric and a viewer, and allowing them to work on one another. For Scott and Castro the aesthetics of the machine, and the subsequent aesthetics of the error, involve setting up situations that might cause computer crashes, software glitches, and errors in information processing.

Scott and Castro thus direct the machine toward a particular operation, setting up the conditions for an error to emerge, but not actually solely designing the aesthetics of the error. Instead, these aesthetic outputs are

emergent based on the initial conditions that the artist sets and the machine's operation within these degrees of freedom. For instance, in *Witness*, as Castro uses a particular digital effect to simulate an error across the digital image, he initiates a process by which digital information is filtered through an effects channel. This is a process that alters the image; importantly though, this alteration is not completely foreseen by Castro. He has a general idea of the type of error that the effect will cause, due to his experience with the digital medium. But the actual appearance of the error is something that is generated as the original digital information comes into contact with the particular conditions of transmission established by Castro.

This can also be seen in the works of Joan Heemskerk and Dirk Paesmans, who together make up Jodi. In these Internet based works the user's computer seems to be running into errors at every instant of interaction. For instance, in *404.jodi.org* it is as though the user and her computer are stuck in a looping error. After accessing the work's web site the user encounters a brightly colored screen with the large error code "404": an error code that usually designates that the user's server could not find the requested file or web page. After clicking on the error code the user links to another page, which displays a list of seemingly random numbers. The user may send an email response on this page, which just seems to generate more meaningless numbers. The user may then click on any particular entry within the list of numbers, taking them to yet another page displaying the 404 error code. Throughout the interaction the user activates a selection of different pages, all of which display what seem to be various errors, triggered by the email responses, and all of which link to a new iteration of the 404 page, each time a different color. As the user moves through this network of linked web pages, what emerges from interaction is not that which is expected or at all controlled by the user. The user may interact with this work, sending an email response, but this information, which causes the seemingly meaningless and unrelated outputs, is passed through a filter that reduces the message to gibberish. This filtering renders the system unusable, in the traditional sense of Human Computer Interaction (HCI). In this work the user is unable to exploit the system; the system does not work *for* the user. Instead errors are continually unfolded from a system. By this, Jodi's formalist investigation of the digital medium exploits the limitations of the digital network and the errors that are enfolded in the system.

In relation to the technological mediations that occur in these works, we can understand the generative capabilities of error through Lev

Manovich's cultural communication model. Manovich explains that a "pre-media" or "pre-digital" cultural communication model represents the transmission of a signal as SENDER—MESSAGE—RECEIVER.⁸ In this original model the sender encodes and transmits a message over a communication channel; as Manovich indicates, in the course of transmission the message is affected by any noise that exists along the communication channel. The receiver then decodes the message. Here the message is susceptible to error in two ways. First, the noise that originates in the communication channel may alter the message. Second, there may be discrepancies between the sender and receiver's code.⁹ In order to propose a post-digital consideration of transmission, Manovich develops this model by including the sender and receiver's software. Post-digital cultural communication can now be considered as SENDER—SOFTWARE—MESSAGE—SOFTWARE—RECEIVER.¹⁰ In this model the cultural significance of software is emphasized. The software, much more than the noise introduced by the communication channel, may change the message. Significantly, the software may introduce an error into the message.

For instance, this can be seen in *404.jodi.org*. In this work the user sends a message, using the dialogue box at the bottom of the web page. The message is composed as the user activates various basic computational processes in order to input her message into the dialogue box. The message is then passed through the web page's software, which in this case involves various filters that convert the message into an unrecognizable and unintelligible mess. For instance one filter appears to remove all the consonants from the message, as well as replacing certain characters with images of white rabbits. The software here is creative; it works with the user, translating her original message, in order to actualize an error.

The cultural role that Manovich ascribes to software also becomes elucidated in the emerging tradition of artists, such as the already mentioned Jodi, as well as Mark Daggert and the German artists group Rolux.org, that are producing alternative web browsers, in a sense interrogating the way in which most of us receive information from the web. One such project is Dimitre Lima, Iman Morandi, and Tony Scott's *Glitchbrowser*. Rather than attempting to assist user navigation, this browser creates errors when displaying the pages that it accesses. The images of any page accessed by *Glitchbrowser* are distorted or glitched through color saturation and abstraction. In this work, following Manovich's cultural communication model, the software that intervenes between sender and

receiver alters the content of the message. Thus in *Glitchbrowser* as well as *404.jodi.org*, the artists remind us that the information we receive is largely reconstituted by the system that it travels through. In a sense the machine reveals itself, rather than creating the illusion of a transparent interface to information. In the application of *Glitchbrowser* the user witnesses the way that messages are transmitted and altered by the interface, with the machine reminding the user of its existence.¹¹

In *Glitchbrowser* as well as Jodi's *404.jodi.org* we see Munari's aesthetics of the machine, perhaps updated to include an aesthetics of software. In both these works the machine's process that actuates an error is positioned as the creative force of the work. In both works information is filtered through a layer of software prior to its visualization on the screen interface. It is this process that creates the error, and it is this process where the "arthood" of the work is realized. This is a process in which software works with information designed either by an artist or a user. Just as the wind works with objects designed by Munari in order to set the *Useless Machines* in motion, so does the software work on information in order to realize the art of the error.

The art of the error is a type of art that is articulated by unforeseen processes, and it is this process-based aesthetic that links the art of the error to various domains of art history. There is a kind of Duchampian legacy, to borrow David Hopkin's term, emergent in these works. In his book *After Modern Art*, Hopkins traces a legacy from Marcel Duchamp, through Robert Rauschenberg, John Cage, Jasper Johns, and Ed Keinholtz that positions art as a dematerialized concept that awaits actualization by a spectator.¹² To continue this pursuit we could situate the error or glitch aesthetic inside this paradigm. As has already been argued we can certainly think of the error in a system in the same manner as artists such as Walther and Arp think of chance as a creative tool. Just as Dada works such as *Collage Arranged According to the Laws of Chance* (1916–17) exploit the chance event as a creative force and hence move into the realm of the potential, works such as Jodi's and Lima, Morandi, and Scott's move into the unforeseen as errors direct the aesthetic. Also, we can see similarities between the art of the error and Rauschenberg's *White Paintings* (1951). These large rectangular white canvases, following Hopkins, are "passive receptors, awaiting events rather than prescribing sensations."¹³ The canvases exist not as art objects in themselves, but await an audience to initiate their *transformation* into art. The works exist as empty spaces that are to be filled by the audience and all those peripheral events that occur around them. Art is not inside the *White Paintings*,

but rather outside them. In this sense the *White Paintings*, as they exist as open potentiality, are similar to John Cage's famous piano composition *4'33"*. As the concert hall is filled with the silence of the performance of Cage's composition, the background noises and activities of an audience are allowed to fill the empty space. Similarly, works that utilize error involve setting up computer situations in which software fulfills the potential for error, just as the audience fills the potential of Cage's silence and Rauschenberg's whiteness. In this sense, in Cage's and Rauschenberg's work, as with the art of the error, both the artist and the audience find themselves in the field of the emergent. The artist must provide the condition for the emergent and unforeseen, and the audience (in Cage and Rauschenberg's case) or the software (for our concerns with error) must bring this condition to satisfaction.

Errors/Potentials/Virtuality

In order to further understand the way in which an error, as a potential event, may slip into existence, and the creativity that might arise via this process, we may turn to Deleuze's philosophy of the virtual. This philosophy is not a philosophy of events that have actually taken place, but rather a philosophy of process and the conditionings from which these events have emerged. As Steven Shaviro explains, "the virtual is like a field of energies that have not yet been expended, or a reservoir of potentialities that have not yet been tapped."¹⁴ The virtual is the impelling force that drives a becoming; it is a conditioning that allows the production of something new or novel.¹⁵ Understanding questions of aesthetics and technology through the virtual is thus not an investigation of the events that actually occurred in a system, but rather understanding the system based on the events that could have potentially taken place, if certain circumstances had been different.¹⁶

It must be remembered though that Deleuze's virtual is not some kind of transcendental essence or "ideal" that the actual is yet to become.¹⁷ Deleuze's philosophy of the virtual moves past this type of transcendental idealism, instead positing what has been described as a transcendental *empiricism*: an approach that focuses on the *conditions* from which experience emerges. In other words, this approach privileges the field from which events, objects, and "things" come into being.¹⁸ For our concerns a Deleuzian approach would privilege the *processes* that give form to the aesthetics of the error. This approach can be described as empiricism

as it focuses on experience; however, for Deleuze, as different from traditional empiricism, the *conditions* and *potential* for experience are positioned as just as real as actual experience. These qualities are positioned as a real, but not actual, virtuality. They are the virtual qualities of every actual entity, and the elements that give actual events their character. Following in this line of thought we can understand diverse things like cities, societies, and people as well as technology and art not by their appearance or their role but rather by the invisible set of organizational structures, rules, laws, and protocols and their interaction with other individuals that directs their becoming.¹⁹ For Deleuze there exists two planes of events developing simultaneously: on one level is actual events, as real events that are the solutions to particular problems, and on the other level is the virtual, as a set of ideal events embedded in the condition of the problem.²⁰ This would be the virtual that surrounds every actual event.

In these terms, the virtual, in respect to interactive art, may be thought of as a field of conditions, imposed by both the internal programming and limitations of the computer as well as the processes initiated by a human user. Following Deleuze, we may say that the software may articulate a link to the field of potential—in this case a field of potential errors—in order to generate unforeseen, and perhaps unwanted, information. This is because the virtual that Deleuze theorizes is a mode of reality that is articulated in the emergence of new potentials; to understand how any collective, assemblage, or machine, including the digital machine, is able to produce new or novel information we need to understand the virtual as a field of emergence, a field or grounding that conditions the manner in which novelties actualize. To change into something new the machine must enter into the field of the potential, and within this reality of change Deleuze's virtual, as the entirely real but not actual conditions of these potentialities, is always implicated.²¹

We can think of an error as just this potential that may or may not become actualized. The system that seeks the actualization of unforeseen potential is also a system that has the capacity to become errant; it is a system that is surrounded by a cloud of potential errors, or, as Deleuze would put it, a cloud of the virtual.²² In other words, at any moment, any system that seeks the unforeseen, the novel, or the new is involved in the process of actualizing potential information. At any moment this system is traversing a field of potential. Within this field exists the virtual error, waiting to be actualized by an errant system. At any point in its process, a system is traversing potential errors and at any point, one may become actualized.

For instance, in traditional computer use, such as our everyday Internet searches, the computer's software activates particular pieces of information, navigating its way through an archive of data. But this is unstable; at any moment the machine may return an errant response, at any moment there may emerge a bug in the system. The technological mediation of data, while for the most part attempting to facilitate the clear exchange of information, may actually give rise to a greater potential for miscommunication. We can see this in its extreme in another of Jodi's Internet-based works, *Blogspot.jodi.org*. When accessing Jodi's blog, the web page is filled with error messages that appear to indicate that the blog has failed to load. Upon clicking on any one of the links presented within the error messages, the user activates other web pages that seem to be errant. It seems that the user is navigating a system that at every turn runs into an error.

Rather than thinking of a digital event as the process by which pre-formed or pre-conceived *possible* information becomes *realized*, we can only think of an error as coming into being as unformed and unforeseen *potential* is *actualized*. The error is potential in the sense that it is not pre-formed or pre-programmed by the artist. It can only be described as potential, which is inherent in the machine. This potential emerges from unique activities that occur in the process of a system, processes that deterritorialize the system, removing it from its usual functioning, which open the system so that unforeseen information may emerge.²³ If a system runs through its sequence of procedures without the potential for error it is essentially closed. In this stable, neat, and predictable transition from cause to effect there is no potentiality for the emergent or the unforeseen; there are no lines of escape. The system may, however, be destabilized or deterritorialized, a process by which parts of the assemblage of the machine are made to function against itself, moving the assemblage from its usual operation into a new regime.²⁴ It is only by allowing the capacity for potential errors, by moving away from the territory of the preconceived aesthetics of errorless machines, that we may provide the opportunity to think the unthought, to allow digital technologies to become-other.²⁵

In a sense, when there is potential for an error to emerge in a system, the system cannot be regarded as a preformed linear progression. Rather, it can only be thought as a divergent process that actualizes elements of the virtual. In terms of error, the condition for an errant event is inbuilt into the digital encounter. When we interact with technology there is always the potential that we will activate an error. We might use the

technology in the wrong way, or the technology itself may have a fault; either way the potential for interaction to return something other than what we ask for is always present. In other words, in any event of human-computer interaction that seeks to actualize the unforeseen, there is enfolded in the event the potential for error. This error may not become actualized, but it is there immanent to the system, waiting to be unfolded from the system, virtual.

Yann Le Guennec's *Le Catalogue* (2003-ongoing) (Figure 2.2) is an example of artist designed software causing unforeseen errors.²⁶ This Internet-based work allows public access to a catalogue of images and installations created between 1990 and 1996. Every time a page is accessed from the archive, an intended error is activated in the form of an intersecting horizontal and vertical line, generated at random points over the image. The more that the page is viewed, the greater its deterioration by the obscuring intersecting lines and the closer the

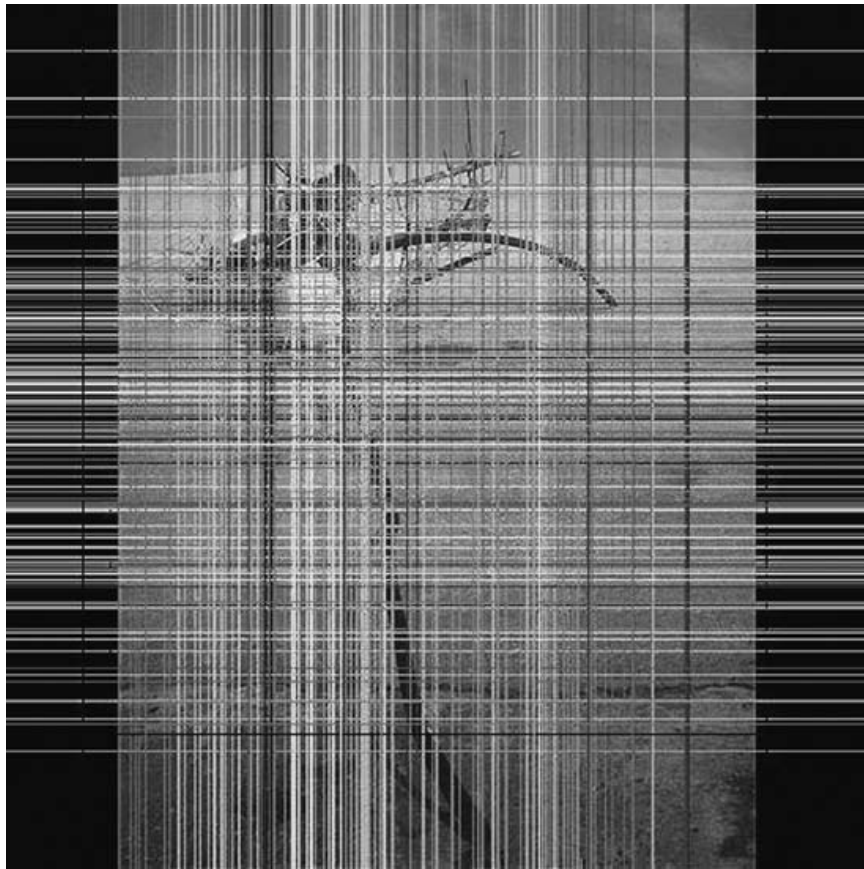


FIGURE 2.2 Yann Le Guennec, *Le Catalogue* (detail), 2003-ongoing. Reproduced with permission of the artist

image comes to abstraction. As Eduardo Navas states, “the archive is similar to analogue vinyl records losing their fidelity and being slightly deteriorated every time the needle passes through the groove.”²⁷ In *Le Guennec*’s catalogue the act of accessing and consulting the information of the archive in essence causes an internal error to the information. This is an error that is inbuilt; it is an error that we cause by the act of looking at or accessing any of the images. As we access the image we allow a potential error to become actual. Eventually the error will take over the original information, and the image will be more about error than it ever was about its referent.

Just as in Cascone’s glitch music, the form and the theme of *Le Catalogue* is error. In the work we see the potential for error whenever information is mediated; *Le Catalogue* becomes a reflection on the act of looking, but looking through a particular paradigm, looking through the interface. The works can only be viewed by the act of accessing them in the archive, viewing them through processes associated with database management and computer software. But this act of looking destroys the images; they can only be preserved by allowing them to exist invisible and un-accessed, behind the interface. But this work is not about preservation. It is ultimately about the ephemeral and its uniqueness. Each error caused by the user—that, directed by a set of conditionings, becomes actual from a field of potential—is unique, and each time the archive is accessed it is differentiated from its past. Every time an image is accessed, it becomes its own original; every time an error from the field of the virtual is actualized, the unforeseen emerges. As Pierre Lévy states, “the virtual is that which has potential rather than actual existence . . . The tree is virtually present in the seed.”²⁸ The seed does not know what shape the tree will take; instead it must actualize the tree as it enacts a process of negotiation between its internal limitations and the environmental circumstances that it encounters along the way. Likewise, the errant system does not know the errors that it may actualize; it must rather actualize these errors as it explores its degrees of freedom and the outside circumstances that might allow the emergence of error.

We can further see this process of the error in Cory Arcangel’s *Data Diaries* (2002) (Figure 2.3).²⁹ In this work Arcangel extracts the data file of the computer’s memory and inputs this information into QuickTime, directing the system to treat the data file as a video file, destabilizing the system and causing it to work against the clear and faultless transmission of information. The result is a visualization of data in abstract hard edge

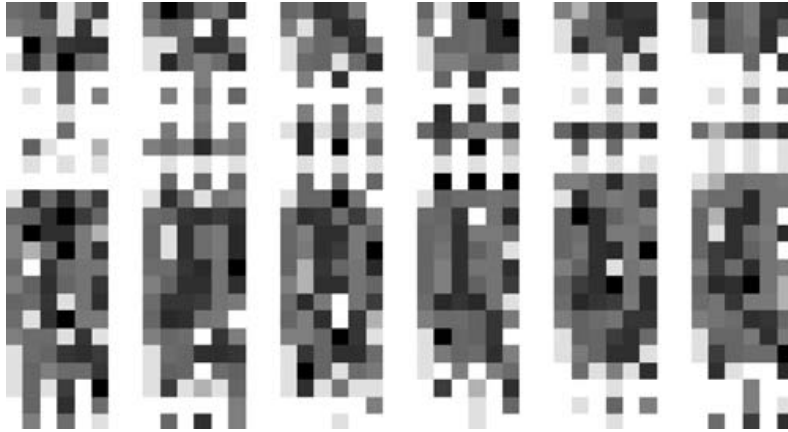


Figure 2.3 Cory Arcangel, *Data Diaries* (still), 2002. Reproduced with permission of the artist

patterns. As Alexander Galloway states in the introduction to this work, “every so often an artist makes a work of art by doing almost nothing. No hours of torturous labor, no deep emotional expression, just a simple discovery and out it pops. What did Cory Arcangel do in this piece? Next to nothing. The computer did the work, and he just gave it a form.”³⁰ These images take on a distinct digital aesthetic, as they are primarily conjured by the machine, as it works within the degrees of freedom set by the artist. They are the result of computer programming, but a type of programming that is designed to produce an unforeseen error by asking a particular system to operate outside of its intended function. Neither Arcangel nor the system knows what shape the data-video will take, just as Levy’s seed does not know the shape of the tree. Rather these images are actualized as the system operates within its internal programming, reading the information from the data file that Arcangel has inputted. Here, as with the artists discussed previously, the error has become an aesthetic tool that is exploited in the art making process. This is an art of the found object; an art practice in which the artist gives new meaning to an object, in this case, the error. It is an art that deterritorializes itself as the outputs of the QuickTime software is made unstable, and it is by this that Arcangel’s work can produce the unforeseen. Galloway and Eugene Thacker,³¹ as well as McKenzie Wark,³² have previously explicated this kind of practice in terms of network culture. For these thinkers it is the act of hacking, of exploiting glitches in the network, that can be a deterritorializing or destabilizing force to the social organization implicit in the network. For both Arcangel’s work and the hacking practices theorized by Wark and Galloway and Thacker,

systems are allowed to become other, to operate outside of their intended function, to turn back against themselves, and to actualize emergent forms as they exploit the potentiality of the virtual.

As the potential for error marks the potential for the new and the unforeseen, we can see that an error in itself may be creative. An error may be utilized. It may be sought out and used to create the unforeseen within traditional systems, such as routine computer use, musical compositions, or visual art practice. In these instances, as the unique generative qualities of error are actualized, the artist can no longer be thought of as the sole creative force. Rather it is now the artist's role to provide the circumstances for an error to emerge. The error fills the potentiality of a system with meaning, whether intended or unintended by the designer. When an error occurs, unforeseen to the artist, the work is affected and possibilities are created for new meanings to emerge.

As Adrian Mackenzie has already pointed out in his book *Cutting Code*, and as is seen quite clearly in the aesthetics of the error that can be unfolded from digital systems, any contemplation of the reception of the image of the interface must also consider the aesthetics of the machine and its particular software.³³ The media event and its aesthetic are thus articulated not just by the image of the interface but also by the digitality of the system, including the work's computational processes as well as its interactivity. Manovich, as already discussed, also points out the cultural role played by software by positioning it as a creative force that not only operates as a tool, meant to be invisible to the user, but also plays an important role in cultural communication.³⁴ This has also been pointed out previously by Mark Hansen, who states, "the image can no longer be restricted to the level of surface appearance, but must be extended to encompass the entire process by which information is made perceivable."³⁵ As such any understanding of the aesthetic event of digital art needs always to take into account the processes that occur along the hidden layers of software.

We have seen that the aesthetics of the error involves an unfolding or becoming-situated within particular pre-scripted for preprogrammed conditions. As such, the works examined here, and the creativity of the error immanent to digital aesthetics, are at their core works that are performed over time by a set of processes. These processes—whether they be the transmission of digital information through an effects channel, as is the case with Castro's work, Arcangel's imposition of a data file into a system that reads video files, or the actions of a user who

interacts with a system to cause errors—are all creative gestures that traverse a field of potential; they are all processes of destabilization or deterritorialization, processes that shake the system free of its precise or pre-programmed functioning. From this, the processes actualize unforeseen errors from the system, operating within the conditions set up by the artist, giving form to previously unformed information and generating a distinct aesthetics of the machine. As the wind blew Munari's *Useless Machine*'s, as chance arranged Arp's collage, and as the audience actuated both Cage's and Rauschenberg's works, so too does the usually unseen levels of software reveal the creativity of the error.

Notes

- ¹ According to Pierpaolo Antonello's recent work on Munari, although published in 1952, the manifesto was actually written in 1938.
- ² Henri Gabriel, "The Hanging Mobile: A Historical Review." *Leonardo* 18, no.1 (1985): 40.
- ³ Gilles Deleuze, *Cinema 2: The Time Image* (London: Continuum, 2005), 45.
- ⁴ Kim Cascone, "The Aesthetics of Failure: 'Post-Digital' Tendencies in Contemporary Computer Music," *Computer Music Journal* 24, no.4 (2000): 13.
- ⁵ Michael Linger, "From Being to Seeing: Michael Linger on Franz Erhard Walther," *FORUM International* 4 (1990): 50–55, http://ask23.hfbk-hamburg.de/draft/archiv/ml_publikationen/kt90-3_en.html.
- ⁶ Manuel DeLanda, *Intensive Science and Virtual Philosophy* (London: Continuum, 2002), 13.
- ⁷ Ibid.
- ⁸ Lev Manovich, "Post-Media Aesthetics," in *(Dis)Locations*, ed. Astrid Sommer (Karlsruhe: ZKM, 2001), 18.
- ⁹ Ibid.
- ¹⁰ Ibid., 17–18.
- ¹¹ Lev Manovich, *The Language of New Media* (Cambridge, MA: The MIT Press, 2001), 206.
- ¹² David Hopkins, *After Modern Art 1945–2000* (Oxford: Oxford University Press, 2000), 41.
- ¹³ Ibid., 42.
- ¹⁴ Steven Shaviro, *Without Criteria: Kant, Whitehead, Deleuze and Aesthetics* (Cambridge, MA: The MIT Press, 2009), 34.
- ¹⁵ Ibid.
- ¹⁶ DeLanda, 35.
- ¹⁷ Claire Colebrook, *Philosophy and Poststructural Theory: From Kant to Deleuze* (Edinburgh: Edinburgh University Press, 2005), 244.
- ¹⁸ Constas V. Boundas, *Deleuze and Philosophy* (Edinburgh: Edinburgh University Press, 2006), 9.

- ¹⁹ Elizabeth Grosz, *Chaos, Territory, Art: Deleuze and the Framing of the Earth* (New York: Columbia University Press, 2008), 42–48.
- ²⁰ Gilles Deleuze, *Difference and Repetition*, trans. Paul Patton (London: Continuum, 1997), 237.
- ²¹ Brian Massumi, “Sensing the Virtual, Building the Insensible,” *Architectural Design* 68, no. 5/6 (1998).
- ²² Gilles Deleuze and Claire Parnet, “The Actual and the Virtual,” in *Dialogues 2*, ed. Eliot Ross Albert (London and New York: Continuum, 1987), 148.
- ²³ DeLanda, 36–37.
- ²⁴ Gilles Deleuze and Felix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. Brian Masumi (London: Continuum, 2004), 156–158.
- ²⁵ D. N. Rodowick, *Reading the Figural, or, Philosophy after New Media* (Durham: Duke University Press, 2001).
- ²⁶ Available online at <http://www.datapainting.com/catalogue/>.
- ²⁷ Eduardo Navas, “Net Art Review November 30–December 6, 2003,” http://www.netartreview.net/featarchv/11_30_03.html.
- ²⁸ Pierre Levy, *Becoming Virtual: Reality in the Digital Age* (New York: Plenum Trade, 1998), 23.
- ²⁹ Available online at <http://turbulence.org/Works/arcangel/>.
- ³⁰ Alexander Galloway, “Introduction to *Data Diaries*”, in *Data Diaries*, <http://www.turbulence.org/Works/arcangel/alex.php>
- ³¹ Alexander Galloway and Eugene Thacker, *The Exploit: A Theory of Networks* (Minneapolis: University of Minnesota Press, 2007).
- ³² McKenzie Wark, *The Hacker Manifesto* (Cambridge, MA: Harvard University Press, 2004).
- ³³ Adrian Mackenzie, *Cutting Code: Software and Sociality* (New York: Peter Lang Publishing, 2006).
- ³⁴ Lev Manovich, “Avant-Garde as Software”, in *Ostranenie*, ed. S. Kovats (Frankfurt and New York: Campus Verlag, 1999).
- ³⁵ Mark Hansen, *The New Philosophy of New Media* (Cambridge, MA: The MIT Press, 2004), 10.